



**SMART
AGRI
HUBS**

D5.6 REPORT ON CC GOOD PRACTICES

WP 5

30.11.2022

[subtitle]



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 818182

smartagrihubs.eu



DOCUMENT IDENTIFICATION

Project	SmartAgriHubs
Project Full Title	Connecting the dots to unleash the innovation potential for digital transformation of the European agrifood sector
Project Number	818182
Starting Date	November 1 st , 2018
Duration	4 years
H2020 Call ID & Topic	DT-RUR-12-2018: ICT Innovation for agriculture – Digital Innovation Hubs for Agriculture
Website	smartagrihubs.eu
File Name	D5.6 Report on CC Good Practices_final
Date	30.11.2022
Version	2.0
Status	Final
Dissemination level	Public
Author	Leader: Ahmad Issa (Fraunhofer IPA) Co-Lead: Cynthia Giagnocavo, Manuel Berenguel (University of Almería)
Contact details of the coordinator	George Beers george.beers@wur.nl



LIST OF ABBREVIATIONS

Abbreviation	Explanation
CC	Competence Centre
RC	Regional Cluster
SAH	SmartAgriHubs
DIH	Digital Innovation Hub
CRM	Customer Relationship Management
WoM	Word of Mouth
IPR	Intellectual Property Rights

LIST OF FIGURES

Figure 1: Framework for Competence Centres Good Practices	9
Figure 2: Open System Representation	10
Figure 3: Interview Template Workflow	11

LIST OF TABLES

Table 1: Summary of Good practices	12
------------------------------------	----

TABLE OF CONTENTS

PROJECT SUMMARY	5
EXECUTIVE SUMMARY	6
1. INTRODUCTION	7
2. GOOD PRACTICE DEFINITION	8
3. APPROACH & METHODOLOGY	9
4. RESULTS	12
4.1 PRESENTATION OF THE CC GOOD PRACTICES	12
5. CONCLUSIONS	20
6. REFERENCES	20
7. APPENDIX A: GOOD PRACTICE INTERVIEW TEMPLATE	20

PROJECT SUMMARY

Digital technologies enable a transformation into data-driven, intelligent, agile and autonomous farm operations, and are generally considered as a key to address the grand challenges for agriculture. Recent initiatives showed the eagerness of the sector to seize the opportunities offered by ICT and in particular data-oriented technologies. However, current available applications are still fragmented and mainly used by a small group of early adopters. Against this background, SmartAgriHubs (SAH) has the potential to be a real game changer in the adoption of digital solutions by the farming sector.

SAH will leverage, strengthen and connect local DIHs and numerous Competence Centres (CCs) throughout Europe. The project already put together a large initial network of 140 DIHs by building on its existing projects and ecosystems such as Internet of Food and Farm (IoF2020). All DIHs are aligned with 9 regional clusters, which are led by organizations that are closely related to national or regional digitization initiatives and funds. DIHs will be empowered and supported in their development, to be able to carry out high-performance Innovation Experiments (IEs). SAH already identified 28 Flagship Innovation Experiments (FIEs), which are examples of outstanding, innovative and successful IEs, where ideas, concepts and prototypes are further developed and introduced into the market.

SAH uses a multi-actor approach based on a vast network of start-ups, SMEs, business and service providers, technology experts and end-users. End-users from the agri-food sector are at the heart of the project and the driving force of the digital transformation.

Led by the Wageningen University and Research (WUR), SAH consists of a pan-European consortium of over 160 Partners representing all EU Member States. SAH is part of Horizon2020 and is supported by the European Commission with a budget of €20 million.

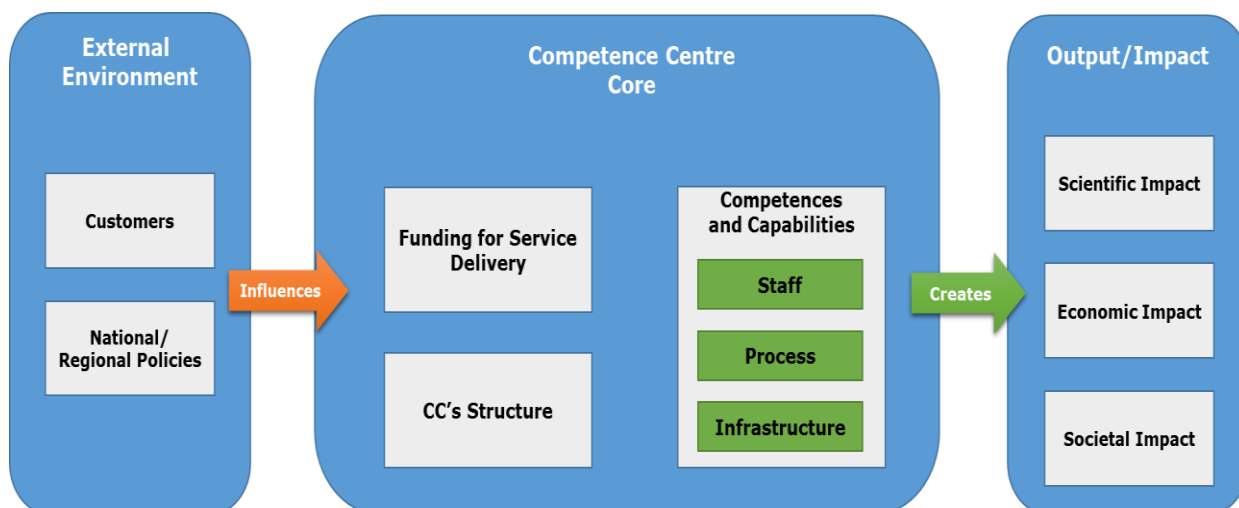
EXECUTIVE SUMMARY

This document is the output of Task 5.6 in Work Package 5 about Competence Centres and provides the final version of the collected good practices in SmartAgriHubs competence centres' network.

The engagement of the CC network members and the collection of the good practices aims to demonstrate CCs that excel and from which other CCs can learn as well as collect practical and replicable guidelines and practices regarding how to implement services and activities within CCs.

In this deliverable, we carried out two aspects of work to collect the good practices in CCs:

- ✚ Developed a framework that summarises the important areas/concepts of competence centres that can be covered by various good practices.
- ✚ Carried out semi-structured interviews with selected "excellent" CCs to collect their good practices.



The document assembles examples gathered from 13 existing excellent Competence Centres in the SAH network, which were identified by the Regional Clusters in the ecosystem. These examples were to include practices that could be transferable to other members within the CC network. These good practices were analysed using the developed framework. As a result, 26 "unique" good practices were reported in this first version under five main categories, namely: *Customers*, *CC Structure*, *Competences and Capabilities* (which contained three main sub-categories: *Staff*, *process* and *infrastructure*), and *Funding Model*. The majority of the collected good practices fall under "customers" and "competence and capabilities" categories, which is expected as these two main categories are directly related to the CC's services delivery.

These good practices are shared with the CCs in SAH's innovation portal. This activity has been aligned with Work Package 1 and Work Package 3 in order to maximise the value of the deliverable to the CCs in the network.

1. INTRODUCTION

WP5 is establishing a pan-European network of excellence of CCs, most of which are or will be associated with DIHs, which can be found on the Innovation Portal of the SAH's project. These CCs provide R&D, technical expertise, laboratory and demonstration facilities, testing and validation, and Information and Communication Technologies (ICT) skills content to users. In SAH, CCs may be local or located outside the region, providing technologies and solutions not available inside a determined region. One of the main objectives of WP5 is to help build the competence centres (CCs) network and enhance the number of CCs found in the Innovation Portal, in order to allow ease of access to innovative technologies and services as well as testing and validations infrastructures necessary for the agriculture sector in Europe. CCs can register on the Innovation Portal and also enter the details and upload videos of their agricultural technology competences and systems. Task 5.6, deliverable 5.6, aims at identifying good practices related to CCs and their operations, services and objectives. It is anticipated that this deliverable will be shared on the Innovation Portal for members of SmartAgriHubs' CC network. In this way, all CCs can be encouraged to embrace some of the adopted good practices that already exist. This in turn will lead to enhanced service delivery in accordance with SAH's mission.

The analysis of the good practices within the competence centres is carried out via the identification of the most common practices in terms of services and activities offered to SMEs, end-users and other stakeholders within the Agriculture sector. In order to obtain the good practices of services provided by the SmartAgriHubs' CC network, a semi-structured interview was carried out in two rounds over a 2-year period with a sample of 13 excellent CCs that are members of the SAH network. These CCs were deemed "excellent" by the regional clusters based on their experience with them and CCs' involvement in the FIEs.

During the interview, a representative of the CC was asked to indicate two or three examples of good practice (if they exist) for their CC, related either to service delivery or to internal operations that affects service delivery. WP5 compiled, analysed and edited these examples in order to present them in a transferable format. It is important to highlight that this report does not intend to benchmark the members of the CC network; rather it aims at encouraging knowledge sharing amongst the network members. The good practices collected were merged with the "success stories" collected also by WP5 team and were shared on the SAH Innovation Portal to be available to the whole SAH network.

2. GOOD PRACTICE DEFINITION

In the context of the CC network within SAH, a good practice can be defined as a process or an activity that is fair and replicable, which has proved to work well and can succeed in achieving its objective. Hence, it can be recommended as a model for other CCs in the network. The goal of identifying good practices within the network and sharing them with the other members of the network is to encourage the adoption of practices and apply knowledge and experience in other regions. Costs and implementation types may differ from one CC to the other depending on the existing conditions, and resources. Yet, those conditions can be shared as well and it may be possible that a CC within the network faces similar challenges and conditions. A good practice, however, should not be seen as prescriptive: The adopter of a good practice can adapt it to meet its needs and challenges, which allow the good practice to evolve as improvements are discovered.

There are several advantages of adopting good practices for CCs in the network as they help them to:

- Respond quickly to changes in their ecosystem;
- Efficiently manage their infrastructure;
- Adopt innovative ways of reaching their customers;
- Manage and/or reduce the competence centre service delivery costs (as they become more efficient);
- Improve the staff skills;
- Improve service quality and reduce unnecessary/counter-productive activities

According to [1], there are no definite criteria to determine whether a practice is “good practice”. However, there are general characteristics that can help determine that:

- A good practice has to be effective and successful: This means that the practice has demonstrated its relevance as one of the most effective ways in achieving its goal; it has been implemented successfully on a regular basis and had a positive impact as a result.
- A good practice has to be technically feasible: This means that the practice is easy to adopt, learn and implement.
- A good practice has to be replicable and adaptable in similar situations.
- Good practices are usually participatory practices and they support a joint sense of ownership for decisions and actions.

3. APPROACH & METHODOLOGY

The engagement of the CC network members and the collection of the good practices aims to demonstrate CCs that excel and from which other CCs can learn and to collect practical guidelines and tips regarding how to implement services and activities.

In this deliverable, we carried out two aspects of work to collect the good practices in CCs:

- ✚ Developed a model/framework that summarises the important areas/concepts of competence centres that can be covered by various good practices.
- ✚ Carried out semi-structured interviews with selected “excellent” CCs to collect their good practices.

Figure 1 shows the developed model, which includes three main components: External Environment, Competence Centre Core, and Output/Impact, which was inspired by the open systems theory (Figure 2). The Open Systems Theory was proposed based on the view that organisations are “social systems” that creates outputs dependant on their environment, which provides various inputs, such as key resources that sustain the organisation and lead to change and survival [2]. From this theoretical perspective, competence centres are viewed as constantly interacting with their environment.

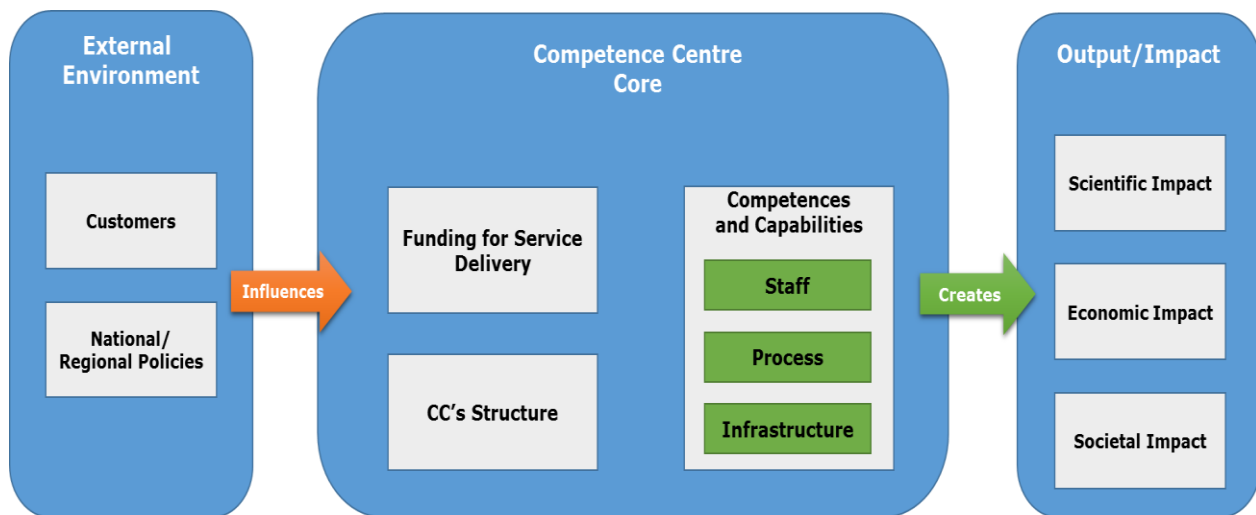


Figure 1: Framework for Competence Centres Good Practices

Each of the model’s components covers one of the elements in the open systems theory: Environment (Inputs), Competence Centre Core (Transformation) and Impact (Outputs).

- The environment of the competence centre has two main components: The customers (companies and end-users) and policy (both national and regional).
- The CC core includes its organisational structure, strategy, funding model, and the main competences and capabilities represented by staff, processes and infrastructure.

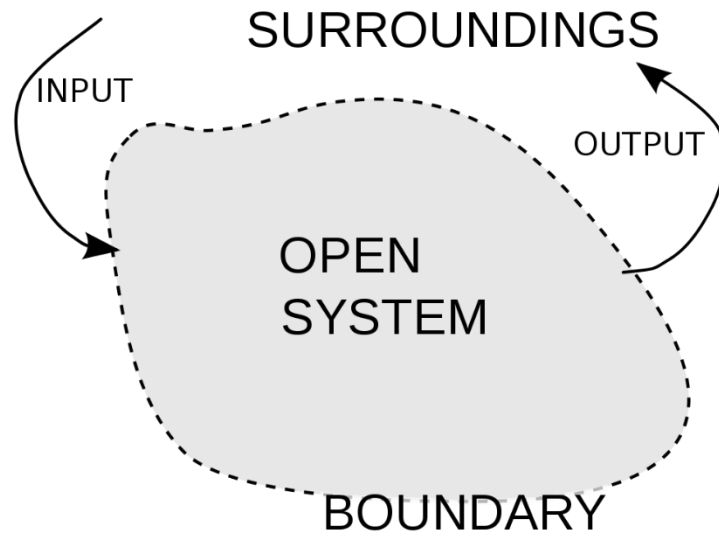


Figure 2: Open System Representation

In order to capture the good practices within the CC network, a series of qualitative interviews were carried out with selected “excellent” CCs to gather detailed information about significant and interesting practices regarding their service delivery and operations. Semi-structured qualitative interviews were chosen as the method for this part of the information gathering since the direct interaction and the type of questions (open-ended) are suitable to collect in-depth insights into the CCs practices, activities and services.

Semi-structured interviews are more flexible than other standardised methods (such as the survey). Although the interviewer should have some basic topics for investigation, the method gives the interviewer room for exploring emergent themes and ideas rather than sticking to pre-defined concepts and questions. The interviewer would use a set of questions for all respondents. The questions are to be asked in the same order and format in order to allow a form of consistency. However, there is also a room for pursuing and probing new and relevant information through follow-up questions noted by the interviewer. The interviewer has to formulate these impromptu questions to investigate leads/topics that may emerge during the interview.

In collaboration with WP3 and RC leaders, more than 20 competence centres were identified by the RC leaders as excellent ones in their regions, especially when it comes to SAH activities and involvement with FIEs. Out of these CCs, 13 CCs have responded to the interviews. This was the only pre-selection criteria of the participants and all interviewees were encouraged to share what they deem as good practices in their CCs. One representative from each CC was contacted to be interviewed and share their good practice. The regional clusters supported the data collection process with direct contacts and email communication.

The interview template (Appendix A) has two main sections:

- 1- Background information: This is an initial general section that collects data about the CC, such as name, region, provided services.
- 2- Good Practice Section: This section collects examples of good practices (2-3 examples per CC), including some lessons learned and operational tips/conditions. In addition, this section includes information regarding the coordination with the associated DIH/regional cluster regarding service delivery and technical transfer.

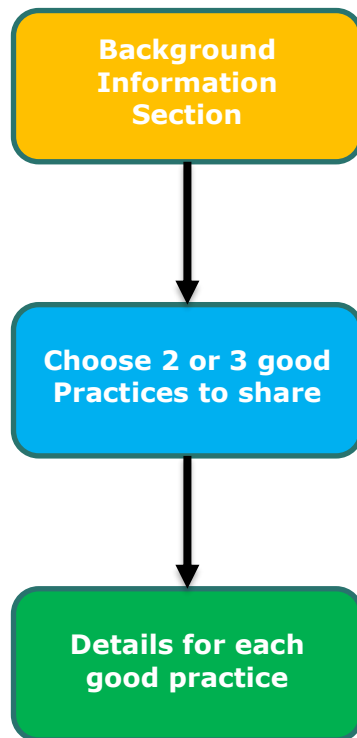


Figure 3: Interview Template Workflow

The results of the interviews were then compared and analysed. The analysis of the survey provided good practices selected as a subset of the overall collected responses based on their uniqueness. This means that similar responses were grouped and treated as one practice. The subset of the Good Practices was then analysed and categorised based on the framework presented earlier. These themes are the result of a synthesis and integration of the identified practices and represent the main headline that several good practices fall under.

4. RESULTS

4.1 PRESENTATION OF THE CC GOOD PRACTICES

Summary of Collected Good Practices

Table 1 summarises the collected good practices, and organise them according to the framework components presented in section 3. In the following sections, the detailed good practices are presented and explained.

Table 1: Summary of Good practices

Framework Component	Collected Good Practices Areas of Focus
Customers	<ul style="list-style-type: none"> • Communication channel diversification • Knowledge Transfer Office • Networking, CRM, and Mailing list • Being part of different networks • Raising awareness and Educating the customers • Facilitation and Peer-to-Peer Learning
Policy	<ul style="list-style-type: none"> • Advocate Role
Competences and Capabilities: Staff	<ul style="list-style-type: none"> • Training Needs and Programmes • Mentoring Programme • Reward System • Equal Opportunity • Complementary Skills
Competences and Capabilities: Process	<ul style="list-style-type: none"> • Adoption of user-led innovation • Experiments & prototyping • Demonstrators (Pilots) • Intellectual Property Rights (IPR) Management
Competences and Capabilities: Infrastructure	<ul style="list-style-type: none"> • Infrastructure Sharing • Co-Creation Space • Early and continuous investment in technology • Remote Working • Pay-per-use Model
CC Structure	<ul style="list-style-type: none"> • Clear and visible service delivery objectives • Adopt agile start-up environment • Services Evaluation
Funding for Service Delivery	<ul style="list-style-type: none"> • Service Bundle through Membership Fee • Freemium Model for Platforms

External Environment

Customers

For the interviewed competence centres, the customers were represented by the ecosystem of companies and end-users that are associated with the creation of economic value, at regional, national and European levels.

Having the customers as a big influencing factor, how a CC attracts and interacts with the customers was deemed critical. Examples of good practice that were shared by several competence centres when attracting or engaging customers include:

- **Communication channel diversification:** attracting end-users in agriculture sector is a complicated task. One CC stated that they use different types of communication channels depending on the end-user segment. For example, they have set up a social media page (Facebook) to engage young(er) farmers and demonstrate through different types of content their technologies, solutions and services. This proved to be a very successful approach that generated interest in their services and led to valuable interactions with farmers. On the other hand, when approaching old(er) farmers, the most successful recruitment strategies included attending agri events/exhibitions in the region as well as the word of mouth (WoM). "Farmers are more likely to work with the CC if their neighbour or one of their network is working with the CC and they have a good experience."
- **Knowledge Transfer Office:** Two interviewed CCs explained that in order to attract and engage companies, a knowledge transfer office (sometimes known as Innovation Strategy Office) is established and tasked with connecting researchers in the competence centres with the industry and end-users. This office maps (internally) the competences within the CC's departments on one hand and identifies industrial and end-users challenges (externally) on the other hand. In this way, it offers brokerage and matchmaking between technical solutions and/or competences that are developed within the CC (in collaboration with SMEs and start-ups) and companies and end-users who can benefit from them.

In one particular CC, this office helps organising competitions within the CC, where interdisciplinary teams are formed across the departments in order to come with new innovations and technical solutions for the industrial challenges within Agrifood sector. This competition was successful in creating external interests from potential investors and banks. The relationship that the office has built with the financial institutions over 8 years resulted in the stock market and a commercial bank being the sponsors of this competition and they host the final event, where prizes are given. The teams can be formed of researchers or grad students, or a combination of both. Researchers can act as mentors for the grad student teams during this competition.

- **Networking, CRM, and Mailing list:**
 - Building relationships with customers and end-users is extremely important for all CCs. Organising and attending events, as well as workshops were some examples of activities that the CCs carry out to attract new customers and engage existing ones.
 - Patience while building the customer base is very important, especially for newly established CCs. "Being visible in the ecosystem and be trusted as a partner is time-consuming process that requires patience and resilience."
 - Two interviewed CCs highlighted the importance of Customer Relationship Management (CRM) as well as maintaining a mailing list for their corporate customers, e.g. SMEs and big companies. CRM refers to systems, technologies, and processes that help the CC manage their relationships with existing and potential customers.
- Being part of different **networks:**
 - There are many benefits to being part of different clusters and networks, including, but not limited to, improved visibility and reputation and identify potential partners. One CC stated that "It makes it possible to find partners for topics of our interest, which would be harder to perform on an individual basis".
 - Share expertise and to develop future collaboration possibilities. Being part of networks, especially ones that go beyond national boundaries, allow CCs

to learn from other organisations. In two cases, the interviewed CCs shared their experience of being part of LEAP4FNSSA¹ and learn from the network participants what works and what does not work in various regions, not just in EU but also in Africa. For example, one CC stated that they learned a lot from working with farmers in Tunisia, where the lack of resources and funding forces them to tackle problems and digitalisation in a different innovative way.

- Organising **hackathons** has been highlighted by two CCs:
 - Successful hackathons have a diverse perspective from different teams. Although it may be easy to cater to just developers and engineers, it is important to take an interdisciplinary approach and have diverse teams that combine different stakeholders, e.g. tech developers and adopters.
 - Making infrastructure easy to access for participating teams is key. If they can focus on innovation rather than infrastructure, this will result in many more successful teams/output.
- **Peer-to-Peer Learning:** Cross visits and study tours can be used to show farmers (as well as other stakeholders) new and improved ways that they can adopt in their own farms. In principle, it lets them see for themselves how it is done. They can gather information from other farms and exchange ideas with other stakeholders. One CC shared their experience in organising “Farm demonstration” activities, where they hosted 50 participants from various EU regions for a 3-day tour, which was very useful for the visitors as well as for the demonstrated farms. The essence of the good practice is to organise workshops for participants to “reflect” on they have seen, what they thought is good, what they thought can be improved and what they thought can be easily transferred to their own regions. This “active” part of the tour added a layer of value to the “passive” part of observing and listening during the visits.
- **Raising awareness and Educating the customers:** Several CCs highlighted that one of the hurdles for using and adopting many services they offer is that the customers do not know it exists and do not know how to use it to its full potential in order to get the most value from the service. This is why “customer education” is also considered as “customer empowerment”. The CC solutions and/or services should help customers and end-users do what they do best, and do it even better than before. One CC stated that this contributes to the customer satisfaction and allows for successful expectation management. Another CC highlighted that this practice allows them to build trust in what the CC offers: “When customers are empowered to find useful information on solutions, technologies, services, and their benefits, their trust in the CC increases.”

Another interviewed CC mentioned that through a collaboration with a private fund, they created a 7-year education and training programme for educating end-users on how to use digital technologies in their farms. This is coupled with field demonstrations of new technologies, which attracts a variety of end-users. They are in discussions with the private fund to create an incubation programme associated with the training programme to help start-ups reach potential end-users.

One CC stated that they organise a “Customer Success Day/Event” for their most committed customers. These events are typically smaller, intimate events when compared with conference. It can be one or half a day seminar for fewer than 50 people, which is designed to contribute significant value to the existing customer

¹ <https://leap4fnssa.eu/>

base. Another CC stated that they organise an “Open Lab Day”: free-of-charge tour of facilities and demonstrators that show technological solutions to existing and potential customers and end-users. They have also the opportunity to talk to experienced experts about the kind of innovations that they might need/adopt. This tour is organised on a regular basis, monthly or bi-monthly for half a day. With the current COVID-19 crisis, a decision was made to turn this tour into a virtual 360°-Tour that can be accessed any time, with the ability to talk to experts online on specific dates.

Policy

Policies and regulation that affect the CCs, and indirectly their services and technical focus, can be divided into two broad categories: research & innovation policy and data privacy policies. The national and EU level policies for research and innovation affects the funding opportunities as well research priorities and alignment with the policy goals. Data privacy policy and regulations mainly focus on rules regarding data usage and ownership as well as data localisation portability.

- **Advocate Role:** No CC discussed data privacy and protection policies and their influence on their service delivery or internal operations, i.e. no good practices were shared under this category. However, one CC representative explained that they play an advocate role between the technical SMEs in their region and the ministry of agriculture in order to identify the SMEs needs of open datasets and communicate it to the ministry, which in turn can provide the datasets to the CC and SMEs.
- The provided services by CCs can be influenced by the priorities of their regional or national policies. Several interviewed CCs highlighted that their national policies focuses on industrial-academic collaboration with R&I. Public agencies usually set out a specialisation strategy through recommending different areas of opportunity, as well as underpinning technologies and infrastructure, which should receive the majority of competitive public investment in science, technology and innovation.

Competence Centre Core

Competences and Capabilities: Staff, Process, and Infrastructure

- **Staff**
 - **Training Needs and Programmes:** Several interviewed CCs’ representatives highlighted that the training needs of their staff are usually related to the industry needs, and there is no formal training programme for their staff. Rather, they encourage **On-the-job training** and discuss each staff member’s training needs on a regular basis. Two CCs’ representatives highlighted that they team with external experts to train their staff if the competence is missing from the team. Such training can take the form of workshops or online webinars. Other CCs highlighted that missing skills and new ways of thinking are often acquired through PhD programmes within the CC. Another CC representative highlighted the training they received when joining the CC regarding “communication skills”, particularly “facilitation” and how this is key when working with different types of stakeholders.
 - **Mentoring Programme:** Two CCs highlighted this good practice, which is a one-on-one programme whereby a mentor facilitates the development of a mentee in order to contribute to the professional and personal development of both mentees and mentors. One CC stated that the main objective is to offer each employee/researcher a personalised development strategy and to train future leaders, as well as build career competence on both sides of the mentoring relationship. This promotes and harnesses the full potential of diversity in the CC – that is, culture, age, and expertise.

- **Reward System:** A good practice shared by one CC regarding the reward system was to move from traditional individual reward system to a team-based one. They highlighted that this will only work if it fits within a broader context of focusing on the team and organisational culture.
The primary concept of rewards within an “Agile” culture is that the team shares the success or failure of the task they are carrying out. Rewarding the team promotes the collaboration amongst the team members and encourages them to help each other out. In this regard, trust within the team would be built when individual team members come together to share information and collaborate. It is important to highlight that some team members can and will align with this culture and reward system faster than other members. In addition, some team members would contribute more than other members, which should be acknowledged by the team management. Another CC stated that coupling a team reward system with a mentoring programme for new employees has led to increased productivity and efficiency while carrying out projects.
- **Equal Opportunity:** One CC stated that they are committed to a policy of equal opportunities for men and women, and supports efforts to create an equitable work life balance. They have a policy for bringing more women into applied research, with an appointed “Equal Rights Officer”. The diversity within their staff members enables them to exploit the creative potential of both sexes and a variety of different age groups, cultural backgrounds and scientific disciplines, and thus improve the quality of their output and service delivery. Some of the tools that they use to promote equal opportunities is to provide a programme for female postgraduate students in association with a mentoring programme. They also participate in “Girls Day”, where they open their doors through workshops, laboratories and test fields to show schoolgirls practical examples as well as provide the opportunity to hold personal discussions with scientists and make useful contacts with those responsible for internships and personnel.
- **Complementary Skills:** Complementary skills are dissimilar skills that, when combined, become more useful than individual skills in accomplishing a goal due to coordinated efforts of individual team members. Different interviewed CCs highlighted the importance of this in their teams. One CC representative even claimed that big part of their success is due to the various team members having complementary skills: “One person knows the model, the other one is good in writing reports, the next one is good at data collection and so on. We also have one who knows what the policy-makers need. It can only be done when all of them cooperate together to achieve the goal”.

- **Processes**

- **Adoption of user-led innovation:** In the innovation process, users can be sources of ideas, products and services as they are able to assess their problems and needs. A living lab methodology was suggested by one CC, where stakeholders form public-private-people partnerships of SMEs, public agencies, universities and RTOs, end-users collaborate to create, prototype, validate, and test new technologies, services, products, and systems in real-life contexts. A “light version” can be an organised approach to innovation, consisting of real-life experimentation and active end-user participation.
- Several interviewed CCs highlighted different types of procedures and processes that can be categorised into three main categories:
 - **Experiments & prototyping:** Within this scope, components for technical solutions and methods are developed and tested in the laboratory environment. A combination of generic & open-source tools with proprietary technologies can be used to carry out the experiments.

Adopting open source tools in combination with open standards allows for “trialability” and interoperability at a low cost for the CC.

- **Demonstrators (Pilots):** A good practice is to allow a partner (e.g. problem owner) to set the agenda of demonstrators and methods developed by the CC to solve real business problems.
- **Intellectual Property Rights (IPR) Management:** Introduction of IPR strategies at the CC has positive consequences and benefits for all stakeholders involved. One CC highlighted that beside the unique expertise and infrastructure, dealing professionally with IP attracts companies and ensures long-term project cooperation with the CC. Existing secured IP that originates from CC research and innovation, allows companies to access critical technologies and know-how. The use of licensing fees was mentioned as a way for the CC to give partner companies and customers the right to apply the invention patented by the CC.

- **Infrastructure**

- **Infrastructure Sharing:** Most of the interviewed CCs provide infrastructure as a service for their customers, stating that it is mainly funded through public funding sources/agencies. One CC stated that sharing infrastructure with other CCs/institutes in the same region or country through mutual agreements has allowed them to offer greater value for their customers while keeping the investment cost down, which was a result of commercial negotiation between participating parties.
Another interviewed CC highlighted their network of “satellite farms” across the country. The farms are set up as testbeds for research and development to aid the improvement of productivity and efficiency within the sector. The network measure the variances within each farming system using cutting-edge equipment. The data from the satellite farms is then centrally stored in a cloud-based database, which can then be used for improving the technical solutions and aid the R&D process.
- **Co-Creation Space:** One CC highlighted a good practice of providing a real-life environment for testing and validating new products, concepts and processes through a co-creation space, where a new product or process is developed from a to z with the involvement of the end-users. This co-creation space is equipped with tools and equipment, such as prototyping equipment and tools, to carry out innovation activities.
- **Early and continuous investment in technology:** Three CCs highlighted this good practice and stated that combining this with the overall technological capabilities has provided them with competitive advantage and allowed them to constantly keeping pace with ever changing customer needs.
- **Remote Working:** Two CCs stated that they had the right infrastructure and tools to allow them to “hit the ground running” during COVID-19 pandemic with little disruptions to their work since they have already invested in remote work technologies before the pandemic. The staff were also trained properly to do work in the farms or from their home using these tools in 2018 and 2019 and were able to continue with little or no disturbances in 2020.
- **Pay-per-use model:** Two CCs stated that they are exploring this model for the efficient utilisation of their infrastructure. The current challenge for them is the idle time when the infrastructure is not utilised, since investments in infrastructure resulted in capabilities that the CC does not exploit 24/7.

Examples of such infrastructure can be prototyping equipment and Machine Learning Infrastructure. The current investigation explores whether the infrastructure can be managed digitally allowing for slots usage. In this way, the CC can offer “free slots”, where the infrastructure is idle to their customer SMEs as a service, which can create a new income stream for the CC that can be re-invested in acquiring new infrastructure.

CC Structure for Service Delivery

Examples of good practice that were shared by several competence centres in this area include:

- **Services Evaluation:** The CC environment encourages a continuous dialogue amongst the different groups within the centre on provided services, target areas and stakeholders, technologies, and methods, while listening to the needs of the customers and end-users.
- Two CC representatives advocated for “flat” management structure, as opposed to the hierarchies found in traditional research organisations. They stated that every member of the team has a voice and a point of view that is respected and discussed. This contributes to the excitement each member of the team feel when collaborating with the customers, reaching tangible impact in the dynamic field of smart agriculture.
- One CC advocated for an environment that is more like a start-up environment, where the culture of “freedom” is focused on helping each other, being supportive of team members without compromising industry needs. This would also allow for introduction of new services and technical solutions to the target customers quickly based on their needs.
- **Clear and visible service delivery objectives:** The research & innovation environment should have clear and visible objectives regarding services offered to the customers and end-users, which are formulated at the top (e.g. by CC leaders and top researchers), while at the same time allow for agility and flexibility for the researchers and innovators to explore different paths;

Funding for Service Delivery

The interviewed competence centres’ services covers different types of beneficiaries/stakeholders, including farmers, start-ups and small business, mid-caps and big companies. In order to provide a wide range of technical services that cater for these stakeholders, funding was highlighted as an important resource to cover infrastructure investment, staff and skills development as well as services delivery (tech transfer).

The interviewed CCs had different funding models for their services, where some of them are publicly-funded institutions, some are non-for-profit organisations, and a small number are private CCs. There is no right or wrong regarding the adopted models, yet some lessons learned were shared during the interviews that could be useful for other CCs:

- One CC explained that they are adding new type of revenue stream through an annual membership fee, which will allow the member to access a bundle of services instead of paying for each service on its own. For example, a member SME can get access to expertise, access to facilities, support in matchmaking with an end-user, and access to test farms as part of this bundle.
- One CC representative highlighted that they are using a “freemium model” for their provided solutions, where a potential customer or end-user have free access to

some basic features, test the basic solution and then decides whether to pay for the premium features.

Output/Impact

No particular impact-related best practices were shared by the interviewed CCs. However, the majority highlighted that their practices are designed to help partner SMEs and end-users optimise their adoption of technologies developed within the CC. In addition, three interviewed CCs highlighted their scientific excellence and contributions to the applied research landscape across the EU, through innovations, scientific publications, and participation in EU and national funded projects.

5. CONCLUSIONS

Deliverable D5.6's objective is to identify good practices within the SAH CCs network related to their services, technology transfer and skills/competences. These good practices will be shared within the network in order to inspire the CC network members and encourage them to adopt some of these identified, replicable good practices.

In this first version of deliverable, a definition of what is a "good practice" in the CC context was proposed and a model/framework that summarises the important areas/concepts of competence centres that can be covered by various good practices was developed and used to present the collected good practices from CCs in the SAH network.

The deliverable presented good practices shared by 13 CCs in the SAH network, which were collected using semi-structured interviews with the CC representatives. These good practices were analysed using the developed framework and, as a result, 26 "unique" good practices were reported in this first version under five main categories, namely: *Customers, Competences and Capabilities (which contained three main sub-categories: Staff, process and infrastructure), CC Structure, and Funding Model*. The majority of the collected good practices fall under "customers" and "competence and capabilities" categories, which is expected as these two main categories are directly related to the CC's services delivery.

These good practices are shared with the CCs in SAH's innovation portal, where they can view, comment and discuss these practices and share others from their own experiences. This activity is aligned with Work Package 1 and Work Package 3 in order to maximise the value of the deliverable to the CCs in the network.

6. REFERENCES

- [1] FAO, "Good Practice Methodology," FAO, 9 2016. [Online]. Available: <http://www.fao.org/3/a-as547e.pdf>. [Accessed 12 2020].
- [2] K. Weber and D. Waeger, "Organizations as polities: An open systems perspective," *Academy of Management Annals*, vol. 11, no. 2, pp. 886-918, 2017.

7. APPENDIX A: GOOD PRACTICE INTERVIEW TEMPLATE

- 1- Introduction: Explain the purpose of the deliverable, structure of the interview, confidentiality, etc.
- 2- Background information:
 - a. Contact details: Name and Organisation
 - b. Establish the context: As a starting point, please tell me about your role/position in the competence centre
- 3- We'd like to ask few questions about your competence centre and its services:
 - a. What services and/or products does your CC offer to SMEs/end-users?
 - b. What are the main area(s) of strengths of your CC?

- 4- Examples of Good practices: Can you provide 2 examples of good practices that are related to CC service delivery or CC operations?
- a. Can you provide 2 examples of good practices that are related to CC service delivery or CC operations?
 - b. What area of CC does this good practice cover? Is it a service or an operation / process?
 - c. Who are the main beneficiaries / target group? (only ask if it is a service)
 - d. Why do you consider this to be a good practice?
 - e. Are the services / processes / products offered in collaboration with a DIH?